



MIAMI TOWNSHIP FIRE & EMS

CLERMONT COUNTY, OHIO

MEDICAL PROTOCOLS



HYPOTHERMIA

Historical Findings

1. High risk groups: elderly, infants, outdoor workers, and alcoholics.
2. Predisposing factors:
 - A. Increased loss of body heat due to:
 - i. Prolonged exposure to cold.
 - ii. Inadequate clothing.
 - iii. Intoxication.
 - iv. Illness or injury.
 - B. Decreased heat production due to:
 - i. Malnutrition.
 - ii. Endocrine disorders.
 - C. Impaired thermoregulation due to:
 - i. Hypoglycemia.
 - ii. Drugs (alcohol, barbiturates, phenothiazines).
 - iii. Sepsis.
 - iv. Central nervous system disorders.
3. Hypothermia can occur under relatively mild weather conditions.

Physical Findings

1. Variable presentation with a range of presenting symptoms from mild nonspecific complaints to unresponsiveness.
2. Mild symptoms include decreases in coordination, reflexes, and alertness.
3. If unresponsive, may appear pulseless, with pupils fixed and dilated.
4. Pulse rate may be severely bradycardic. A radial pulse may be very difficult to palpate. The pulse rate should be obtained with palpation of a central pulse (carotid or femoral) for at least one minute.
5. Extremities may be stiff resembling rigor mortis, or may be cyanotic or edematous.



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EKG Findings

1. Bradycardia.
2. May see "J" or "Osborne" waves on rhythm strip.

Differential Diagnosis

1. Cardiac arrest.
2. Coma.
3. Severe shock.
4. Narcotic abuse.

Protocol

Cardiac arrest management

1. **Mild hypothermia ($>34^{\circ}\text{C}$ [$>93.2^{\circ}\text{F}$])**
 - A. Follow appropriate arrest protocol without alterations.
 - B. Provide active internal rewarming.
 - i. Humidified oxygen $42^{\circ}\text{C} - 46^{\circ}\text{C}$ [$108^{\circ}\text{F} - 115^{\circ}\text{F}$].
 - ii. Warm intravenous fluid, 0.9 % normal saline at 43°C (109°F).
2. **Moderate hypothermia (30°C to 34°C [86°F to 93°F])**
 - A. Follow the appropriate arrest protocol with prolonged intervals between medications.
 - B. Provide active internal rewarming.
 - i. Humidified oxygen $42^{\circ}\text{C} - 46^{\circ}\text{C}$ [$108^{\circ}\text{F} - 115^{\circ}\text{F}$].
 - ii. Warm intravenous fluid, 0.9 % normal saline at 43°C (109°F).
3. **Severe hypothermia ($<30^{\circ}\text{C}$ [86°F])**
 - A. Initiate CPR, if defibrillation is indicated deliver only one shock at 360 joules monophasic or 200 joules biphasic and withhold medications until temperature $> 30^{\circ}$ (86°F).
 - B. Priority should be focused on active internal rewarming.
 - i. Humidified oxygen $42^{\circ}\text{C} - 46^{\circ}\text{C}$ [$108^{\circ}\text{F} - 115^{\circ}\text{F}$].
 - ii. Warm intravenous fluid, 0.9 % normal saline at 43°C (109°F).



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4. Consider transport of hypothermic cardiac arrest to a facility capable of cardiopulmonary bypass. (B-North, Mercy Anderson, Jewish, UC, CCHMC)

Perfusing patients NOT in cardiac arrest

1. Initiate contact; reassure, and explain procedures.
2. Prevent additional evaporative heat loss by removing wet garments and insulating the victim from further environmental exposures.
3. Perform all procedures gently while closely monitoring cardiac rhythm due to increased risk of ventricular fibrillation.
4. Assess and secure the patient's airway and provide oxygen per the airway, oxygen and ventilation protocol.
5. Perform patient assessment, obtain vital signs and begin cardiac monitoring.
 - A. If the patient presents with an altered mental status, assess for hypoglycemia and drug overdoses and treat per protocol in conjunction with this protocol to help determine and treat possible causes.
6. Do **NOT** massage extremities (causes increased cutaneous vasodilation and decreases shivering).
7. Do **NOT** use hot packs (can cause serious burns, as well as possibly increased mortality).
8. Initiate IV access with a saline lock or 0.9% normal saline KVO.
9. Initiate rewarming therapies as follows:
 - A. Mild hypothermia ($>34^{\circ}\text{C}$ [$>93.2^{\circ}\text{F}$]): passive rewarming
 - i. Warm blankets and warm environment.
 - B. Moderate hypothermia (30°C to 34°C [86°F to 93°F]): active external rewarming.
 - i. Warm blankets and warm environment.
 - ii. Warm intravenous fluid, 0.9 % normal saline at 43°C (109°F).
 - C. Severe hypothermia ($<30^{\circ}\text{C}$ [86°F]): active internal rewarming
 - i. Humidified oxygen 42°C – 46°C [108°F – 115°F].
 - ii. Warm intravenous fluid, 0.9 % normal saline at 43°C (109°F).